Indicator: Maintaining Swimming Designated Uses

Indicator/Measure

Swimming and others forms of water-based activities are an integral part of our lives. America's lakes, rivers and shorelines are high on the list of preferred vacation destinations. While the water at most beaches is safe most of the time, testing the water for potentially harmful bacteria is important to warn citizens when there may be a problem, and to identify pollution sources. Swimming in unsafe waters can result in a variety of illnesses, including sore throats, ear infections and diarrhea. The most common sources of disease-causing bacteria (and other microorganisms) are improperly operated waste water treatment plants, storm or sanitary sewer overflows (often combined), inadequate septic systems and concentrated animal feeding operations. The percentage of assessed river and stream miles, lake acres and Great Lakes shoreline miles designated for primary contact recreation (or swimming) that are meeting the swimming use is being used as a direct indicator of attainment of this goal. The percentage of water miles and acres designated for swimming that have been assessed, provides additional information about the extent of our knowledge on the attainment of this goal.

Purpose

This indicator provides a direct measurement of the safety of various waters for swimming (also called whole body contact or primary contact recreation). This indicator is measured in terms of bacterial concentrations in the water, using specific microorganisms that inhabit the intestinal tract of humans, such as E. Coli. Indiana, Michigan and Ohio use E. Coli as the indicator organism, while the remaining Region 5 states use fecal coliforms, a less-specific and less-preferred measure of harmful bacteria. But these states are moving toward adoption of E. Coli or other indicators. High bacterial concentrations may be caused by agricultural and/ or urban runoff, concentrated animal feeding operations, failing or inadequate septic systems, improperly operated waste water treatment plants, combined storm and sanitary sewer overflows (CSOs), and sanitary sewer overflows (SSOs). Elevated concentrations of bacteria may result in periodic beach closings, especially following heavy rains. These bacterial data, when taken together with the information on the amount of various waters assessed, will provide a picture of the safety of Region 5 waters for primary recreation.

Interpretation

Tracking progress toward the goal will focus on changes to the indicators. For example, an increase in the percentage of assessed water miles and acres designated for swimming that are meeting that use will be viewed as a positive trend. Also, an increase in the amount of waters assessed for this use will be viewed as a positive trend.

Endpoint

Over time, EPA would like to see progress made in both the percentage of waters supporting swimming use and the percentage of waters assessed for that use.

Discussion/Importance

One of the original goals of the Clean Water Act is that waters be safe for recreational purposes, including swimming. People want to be assured of safe waters in areas traditionally reserved for recreation and vacationing. The swimming designated use is intended to provide an indicator of the condition of these

recreational waters. The graphs show the status of attainment of swimming use for rivers and streams, lakes and reservoirs, and Great Lakes shoreline in Region 5, both by state and for the Region as a whole. Figure 1 shows the percentage of waters assessed for swimming use was 10 percent for rivers and streams, about 60 percent for lakes and reservoirs, and 70 percent for Great Lakes shoreline. Figure 2 shows the percentage of assessed waters meeting the swimming use was almost 80 percent for rivers and streams, nearly 70 percent for lakes and reservoirs, and more than 90 percent for Great Lakes shoreline.

Figure 1. Percent of Waters Assessed for Swimming Use

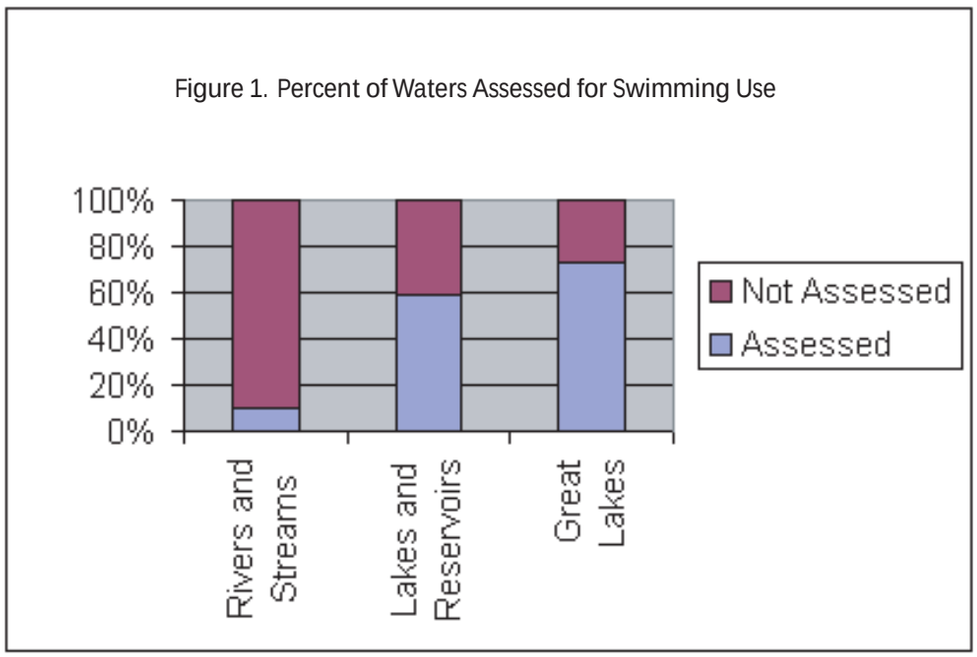
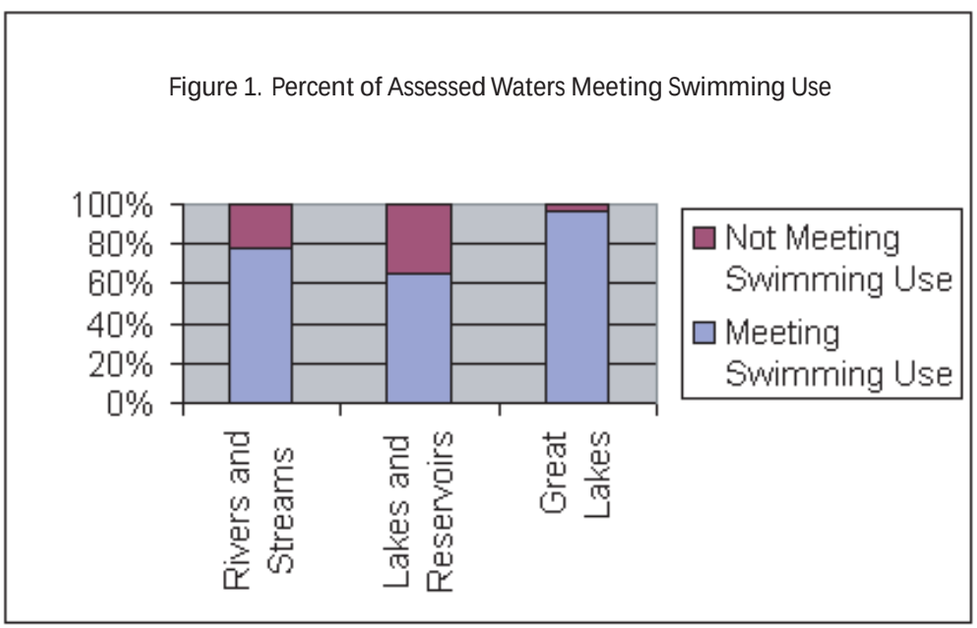


Figure 1. Percent of Assessed Waters Meeting Swimming Use



Maintaining Swimming Designated Uses

Data Source

This data came from the state Section 305(b) reports for 2002, and in the case of Ohio from the 2000 report, since 2002 data were not available.

Limitations

1. Bacterial data that are collected and reported via the 305(b) reporting process are usually not amenable to tracking trends because sampling locations and analytical methods may change.

2. It is important to remember that these results apply only to those waters that were assessed for 2002, and cannot be extrapolated to all waters designated for swimming use in Region 5.

3. The percentage of rivers, streams, lakes and reservoirs assessed for swimming use should be increased in future years. As shown in the Percent of Waters Assessed graph, less than 20 percent of rivers and streams were assessed for swimming use in 2002.

Definitions

- *Primary contact recreation:* A recreational water designated use in which the ingestion of water or whole body immersion is likely to occur. These uses would include activities such as swimming, kayaking, water tubing, windsurfing, surfing, and water skiing.
- *Secondary contact recreation:* A recreational water designated use in which ingestion of water or whole body immersion is not likely to occur. These uses would include activities such as boating, canoeing, fishing, and limited water contact incidental to shoreline activities.
- *Indicator organism:* A specific type of bacteria known to inhabit the intestines of humans and some animals, such as E. Coli, or one of the enterococci (S. Faecalis), which is used to indicate the resence of potentially harmful bacteria in a water body.
- *Fecal coliforms:* A less-specific and less-preferred group of indicator organisms that inhabit the intestines of warm-blooded animals, but not specific to humans, and have been used as indicator organisms in some states.

For More Information

EPA
United States
Environmental Protection
Agency

Region 5
Water Division, Water Quality Branch
David Stoltenberg
(312) 353-5784
e-mail *Stoltenberg.David@epa.gov*
www.epa.gov/region5/water/goals.htm